Volunteer Lake Assessment Program Individual Lake Reports

BEECH POND, LOWER, TUFTONBORO, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	1,600	**Max. Depth (m):**	15.2	**Flushing Rate (yr^{-1}):**	0.8
Surface Area (Ac.):	155	**Mean Depth (m):**	6.8	**P Retention Coef:**	0.63
Shore Length (m):	4,700	**Volume (m^3):**	4,250,500	**Elevation (ft):**	968

TROPHIC CLASSIFICATION

Year	Trophic class
1980	OLIGOTROPHIC
2001	OLIGOTROPHIC

KNOWN EXOTIC SPECIES

The Waterbody Report Card tables are generated from the 2012 305(b) report on the status of N.H. waters, and are based on data collected from 2001-2011.

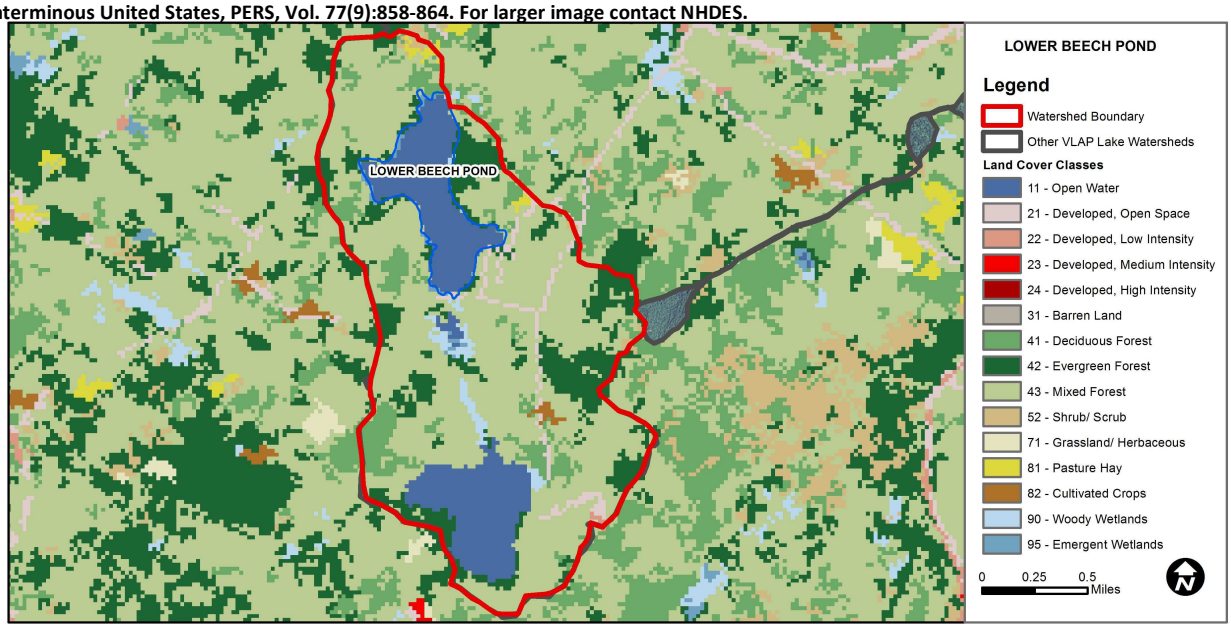
Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Good	>/=5 samples and median is < threshold but > 1/2 threshold value.
	pH	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	D.O. (mg/L)	Encouraging	< 10 samples and no exceedance of criteria. More data needed.
	D.O. (% sat)	Encouraging	< 10 samples and no exceedance of criteria. More data needed.
	Chlorophyll-a	Good	>/=5 samples and median is < threshold but > 1/2 threshold value.
Primary Contact Recreation	E. coli	Very Good	All bacteria samples <75% of geometric mean criteria, but not enough to calculate geometric mean. Or, all bacteria samples are < single sample criteria and calculated Geometric means are less than geometric mean criteria.
	Chlorophyll-a	Good	At least 10 samples with 1 sample but < 10% of samples exceeding criteria.

BEACH PRIMARY CONTACT ASSESSMENT STATUS

LOWER BEECH POND - WILLIAM LAWRENCE CAMP BEACH	E. coli	Good	Geometric means < criteria; however at least 1 exceedance of the single sample criteria occurred.

WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.



Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	17.6	Barren Land	0	Grassland/Herbaceous	0
Developed-Open Space	2.37	Deciduous Forest	7.5	Pasture Hay	0.42
Developed-Low Intensity	0.11	Evergreen Forest	15.44	Cultivated Crops	0.31
Developed-Medium Intensity	0	Mixed Forest	53.72	Woody Wetlands	1.57
Developed-High Intensity	0	Shrub-Scrub	0.44	Emergent Wetlands	0.59

VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS
LOWER BEECH POND, TUFTONBORO, NH
2013 DATA SUMMARY

OBSERVATIONS AND RECOMMENDATIONS (*Refer to Table 1 and Historical Deep Spot Data Graphics)*

- **CHLOROPHYLL-A:** Chlorophyll levels were low on each sampling event and much less than the state median. Historical trend analysis indicates relatively stable chlorophyll with high variability between years.
- **CONDUCTIVITY/CHLORIDE:** Conductivity and chloride values were low throughout the summer. Historical trend analysis indicates relatively stable epilimnetic conductivity with moderate variability between years.
- **E. COLI:** E. coli levels were very low and much less than the state standards for public beaches and surface waters.
- **TOTAL PHOSPHORUS:** Epilimnetic (upper water layer) and metalimnetic (middle water layer) phosphorus levels were low and much less than the state median. Historical trend analysis indicates relatively stable epilimnetic phosphorus with high variability between years. Hypolimnetic phosphorus was elevated in August potentially due to the release of phosphorus from bottom sediments when dissolved oxygen levels are less than 1.0 mg/L. Inlet and Outlet phosphorus levels were low in August.
- **TRANSPARENCY:** Transparency was good and better than the state median. Historical trend analysis indicates relatively stable transparency with moderate variability between years.
- **TURBIDITY:** Deep spot and tributary turbidity was low on each sampling event.
- **PH:** Metalimnetic and hypolimnetic pH levels were less than desirable range of 6.5 – 8.0 units. Historical trend analysis indicates relatively stable epilimnetic pH with moderate variability between years.
- **RECOMMENDED ACTIONS:** Overall water quality was good and trends were stable. The increased frequency and intensity of storm events highlights the importance of managing stormwater runoff from lake and watershed properties, dirt/gravel road, and steep slopes. DES' "Homeowner's Guide to Stormwater Management" is a good resource for lake residents. Keep up the great work!

Table 1. 2013 Average Water Quality Data for LOWER BEECH POND

Station	Alk. mg/l	Chlor-a ug/l	Chloride mg/l	Cond. uS/cm	E. Coli #/100ml	Total P ug/l	Trans. m NVS	Turb. ntu	pH
Epilimnion	3.30	2.08	5	31.9		5	4.33	0.43	6.53
Metalimnion				31.9		7		0.52	6.47
Hypolimnion				28.5		13		0.60	5.72
First Beach					4				
Inlet				29.0	10	3		0.35	6.56
Outlet				31.6	10	3		0.34	6.72
Second Beach				27.2	3			0.28	6.76

NH Median Values: Median values for specific parameters generated from historic lake monitoring data.
Alkalinity: 4.9 mg/L
Chlorophyll-a: 4.58 mg/m^3
Conductivity: 40.0 uS/cm
Chloride: 4 mg/L
Total Phosphorus: 12 ug/L
Transparency: 3.2 m
pH: 6.6

NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.
Chloride: < 230 mg/L (chronic)
E. coli: > 88 cts/100 mL – public beach
E. coli: > 406 cts/100 mL – surface waters
Turbidity: > 10 NTU above natural level
pH: 6.5-8.0 (unless naturally occurring)

HISTORICAL WATER QUALITY TREND ANALYSIS

Parameter	Trend	Explanation	Parameter	Trend	Explanation
pH	Stable	Trend not significant; data moderately variable.	Chlorophyll-a	Stable	Trend not significant; data highly variable.
Conductivity	Stable	Trend not significant; data show low variability.	Transparency	Stable	Trend not significant; data moderately variable.
			Phosphorus (epilimnion)	Stable	Trend not significant; data highly variable.